

Chapter 4

Characterizing the Nature and Extent of Contamination

remediated to residential closure levels. In such cases, a POC remedial plan must be designed and implemented (see Figure 4-4).

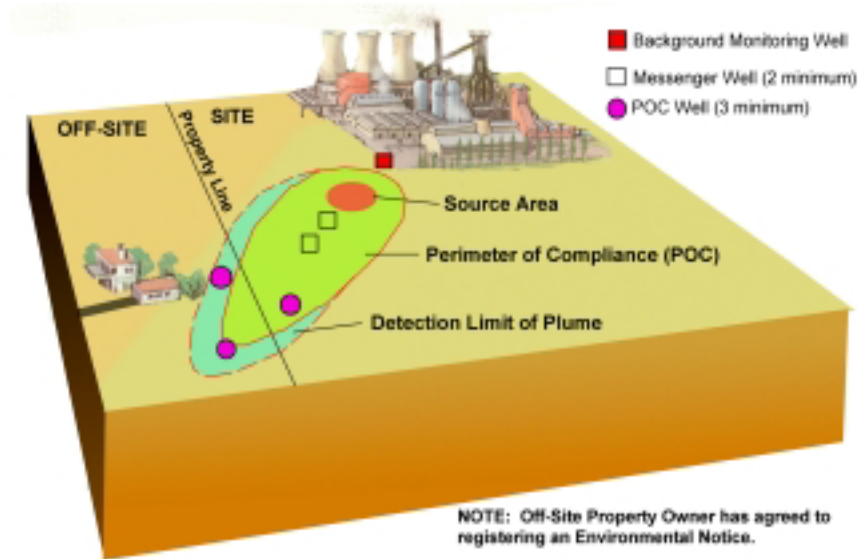


Figure 4-3. Off-Site POC with Property Control

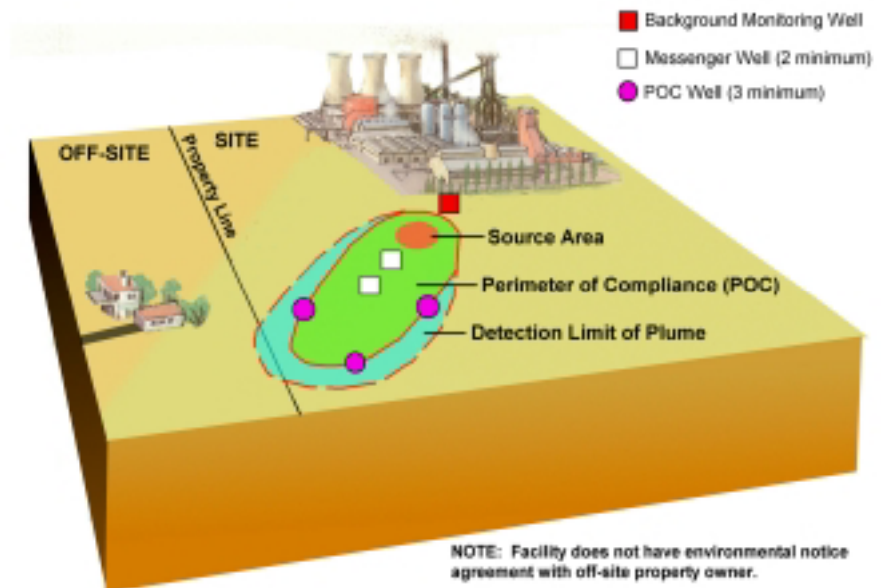


Figure 4-4. POC without Property Control

POC Remedial Plan

It may be necessary to develop and implement a remedial plan if COC concentrations increase significantly at the POC during quarterly sampling events. The remedial plan should include an implementation and compliance schedule. The goal of the remedial plan is to stabilize the plume at the POC and demonstrate that the plume will stabilize or decrease in concentration when remediation is complete. The POC remedial plan must be submitted to the appropriate IDEM program within 60 days of determining that contamination exceeds closure levels at the POC. The plan should address applicable programmatic remedial options, which may include COC source reductions, hydraulic control of a plume, or a nondefault assessment to model and monitor future stability and compliance with the POC.

4.4.3 Field Investigation of the Nature and Extent of Contamination in Other Media

The nature and extent of contamination in other media may need to be determined. Determining the nature and extent of contamination in surface water, sediments, and air is discussed below.

4.4.3.1 Surface Water

Evidence of drainage or discharge to surface water near a source area should be reviewed carefully. Surface waters include but are not limited to rivers, streams, creeks, reservoirs, lakes, ponds, wetlands, and free-flowing underground streams. Under RISC, surface water is considered an ecologically susceptible area. Evidence of impacts to surface water will require a nondefault risk assessment to evaluate impacts to biota. Surface water closure levels are not included in this version of RISC.

4.4.3.2 Sediments

A common problem associated with surface water contamination is sediment contamination and its associated affect on aquatic organisms particularly in their larval or juvenile life stages. Sediments may be a major repository for some of the more persistent constituents released into the overlying surface waters. Sediments primarily consist of particulate matter, typically mixtures of clay, silt, sand, organic matter, and minerals. This matrix of materials can be relatively heterogeneous in terms of physical, chemical, and biological characteristics.

Many factors determine the relative partitioning or sorption of a compound between water and sediment. A few of these factors

include the compound's aqueous solubility, pH, affinity for sediment organic carbon and dissolved organic carbon, and oxidation-reduction potential, as well as the grain size of the sediment. Evidence of COC migration from surface waters to sediment should be reviewed carefully. Evidence of impacts to sediment will require a nondefault risk assessment. Sediment closure levels are not included in this version of RISC. A possible sediment closure level may be identified using the RCRA QAPP, Instructions, EPA Region 5, April 1998, Appendix C.

4.4.3.3 Air

Ambient and indoor air contamination is another area that is not specifically addressed under default RISC closure levels. In the default exposure equations, RISC considers volatilization and inhalation from soils and inhalation from indoor exposure to ground water. However, issues such as excessive fugitive dust and ambient and indoor air concentrations are not considered. Where applicable, care should be taken to characterize these potential pathways (such as volatilization from surface impoundments, excessive wind blown dust, and vapor intrusions). Any suspected air emissions must be characterized. Evidence of air contamination will require a nondefault risk assessment. Air closure levels are not included in this version of RISC.

4.5 Assessment: Data Validation and Usability

After field investigation data is collected, it should be evaluated for its conformity with DQOs. If data conform to DQOs, the data should be incorporated into the CSM. When the horizontal and vertical extent of contamination is fully depicted in the CSM, the need for any additional sampling should be clear.

Based on this information, potential remedies and additional analyses appropriate for the area should be considered, as well as if any additional sampling is necessary. The fate of each COC should be considered carefully, and the COC should either be addressed or eliminated from further consideration. The evaluation of exposure pathways and transport mechanisms should also be reviewed carefully, and temporal trends should be analyzed. By reviewing and considering all relevant information, a more informed decision can be made regarding how to proceed with closure.